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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,286	12/10/2001	Tadashi Takano	SIMTEK6227	8443

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EXAMINER

LE, DANG D

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 10/08/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/683,286

Applicant(s)

TAKANO ET AL.

Examiner

Dang D Le

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because it is not clear what "their" in line 6 refers to. It is not clear if the individual coil or the group including individual coils has one end connected together at common node.

Claim Objections

3. Claims 1-12 are objected to because of the following informalities:
 - Delete "type" in line 1 of the claims.
 - Claim 2, line 2, replace "magnet" with – magnets --. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Kordik.

Regarding claim 1, Kordik shows a permanent magnet type rotary electric machine having a rotor and a stator (Figure 1), one of said rotor (12) and said stator comprising a plurality of permanent magnets disposed such that polarities of adjacent magnets are different from each other, the other of said rotor and said stator comprising a plurality of electrical coils (Figure 2) wound around cores juxtaposed to said permanent magnets for cooperation therewith, said coil windings (60) being arranged in groups (62 and 64) having their windings connected to each other with common ends (between 62 and 64), no two coil windings of each group being circumferentially adjacent (because of poles 56) to the other.

Regarding claim 2, it is noted that Kordik also shows a permanent magnet type rotary electric machine having a rotor and a stator (Figure 1), one of said rotor and said stator comprising a plurality of permanent magnets disposed such that polarities of adjacent magnets are different from each other (Figure 4), the other of said rotor and said stator comprising a plurality of electrical coils (62, 64) wound around cores juxtaposed to said permanent magnets for cooperation therewith, one of said cores (Figure 3) and said permanent magnets (Figure 4) being disposed in nonsymmetrical relation to the axis of rotation of said stator.

Regarding claim 3, it is noted that Kordik also shows the coil windings being arranged in groups (62 and 64) having their windings connected to each other with

common ends (between 62 and 64, Figure 2), no two coil windings of each group being circumferentially adjacent to the other (because of poles 56).

Regarding claim 5, it is noted that Kordik also shows the magnitude of the torque exerted on each permanent magnet determined separately by a computer numerical analysis and peaks or bottoms of the torque curves of said permanent magnets are offset from each other with respect to the rotation angle of the rotor so that the cogging number is increased.

Regarding claim 6, it is noted that Kordik also shows the coil windings being arranged in groups having their windings connected to each other with common ends, no two coil windings of each group being circumferentially adjacent to the other.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 4 and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kordik in view of Suzuki et al.

Regarding claim 4, Kordik shows all of the limitations of the claimed invention including all the permanent magnets being of substantially of the same shape except a circumferential offset angle of each permanent magnet from a regularly disposed position being set such that a cogging number per rotation of the rotor is equivalent to as the least common multiple of the number S of slots between the electrical winding cores and the number P of magnetic poles.

Suzuki et al. show a circumferential offset angle of each permanent magnet from a regularly disposed position being set such that a cogging number per rotation of the rotor is equivalent to as the least common multiple of the number S of slots between the electrical winding cores and the number P of magnetic poles (Figure 6) for the purpose of reducing irregularity of the rotation.

Since Kordik and Suzuki et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to set a circumferential offset angle of each permanent magnet from a regularly disposed position such that a cogging number per rotation of the rotor is equivalent to as the least common multiple of the number S of slots between

the electrical winding cores and the number P of magnetic poles as taught by Suzuki et al. for the purpose discussed above.

Regarding claim 7, it would have been obvious to one having ordinary skill in the art at the time the invention was made to set the number S of slots eighteen, the number P of magnetic poles twelve, and divide the twelve permanent magnets are into four sets, each set comprising three circumferentially adjacent permanent magnets, the circumferential pitch angle of the three permanent magnets of each set being 26.7 degrees and the circumferential pitch angle of adjacent two permanent magnets between the sets being 36.60 degrees, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 9, it would have been obvious to one having ordinary skill in the art at the time the invention was made to set the number S of slots eighteen, the number P of magnetic poles twelve, and divide the twelve permanent magnets into four sets, two of said four sets comprising three circumferentially adjacent permanent magnets, the circumferential pitch angle of the three permanent magnets of each set being 26.7 degrees and the circumferential pitch angle of permanent magnets within the other two sets disposed at a symmetrical position being 33.3 degrees, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 11, it would have been obvious to one having ordinary skill in the art at the time the invention was made to set the number S of slots eighteen, the

number P of magnetic poles twelve, and divide the twelve permanent magnets into four sets of three circumferentially adjacent permanent magnets, the circumferential pitch angle of the three permanent magnets of each set being 28.3 degrees circumferential pitch angles of adjacent permanent magnets between adjacent different sets being set to 33.3, 28.3, 33.3, and 28.3 degrees circumferentially in this order, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 8, 10 and 12, it is noted that Kordik also shows the coil windings being arranged in groups having their windings connected to each other with common ends, no two coil windings of each group being circumferentially adjacent to the other.

Information on How to Contact USPTO

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dang D Le whose telephone number is (703) 305-0156. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

DDL
September 30, 2002

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Long LE